UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/682,318	10/09/2003	Hiroaki Arakawa	03617/LH	9828

1933 7590 08/09/2005

FRISHAUF, HOLTZ, GOODMAN & CHICK, PC
220 5TH AVE FL 16
NEW YORK, NY 10001-7708

EXAMINER	
MARTIN, LAURA E	
ART UNIT	**PAPER NUMBER**
2853	

DATE MAILED: 08/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

AK

Office Action Summary	Application No. 10/682,318	Applicant(s) ARAKAWA, HIROAKI	
	Examiner Laura E. Martin	Art Unit 2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10-09-2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14; 16-18* is/are rejected.

7)☒ Claim(s) *15* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *09 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *10-9-03 & 10-28-04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 4, and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Walker et al. (US 6,158,344).

As per claim 1, Walker et al. teaches an printer, which is known in the art as an inkjet recording apparatus (C1, L36) comprising of a recording medium feeding device (Fig 1 illustrates a media advance and print head mechanism) to feed a recording medium on a platen (C2, L28-30); a recording head (Fig 2.16) having a plurality of nozzles (Fig 2.32) to eject ink droplets onto the recording medium (C2, L66+); a recording head moving device (Fig 1.18) to move the head perpendicular to the feeding direction (C2, L35-38) of the recording medium; a mark recording device C1, L50) to record a mark (calibration marks C1, L48-50) which is perpendicular to the feeding direction (Fig 5.66) of the recording medium, on the recording medium (Fig 5.64) by the ink droplets jetted (ink droplets are fired during nozzle movement (C2, L66-67) from at least one of the nozzles (appropriate nozzles are fired C2, L67+) of the recording head, while the recording head is moved by the head moving device (nozzle moved transversely for printing (C2, L66-67); and a mark detecting device (optical sensor C1, L36-38) which is moved together with the recording head (optical sensor Fig 1.21 mounted to carriage Fig 1.18, C2, L41; print head Fig 1.16 mounted to carriage Fig 1.18 C2, L32) and detects a mark (C1, L37); wherein a feeding amount of the recording medium is determined on the basis of a position on which the mark detecting device detects the mark (nominal error C4, L21+ is measured between marks which is sent back to summing function C4, L2+ which supplies paper advance value).

As per claim 4, Walker et al. teaches a feeding distance of the recording medium until the mark detecting device detects the mark is less than the feeding amount which the recording medium must advance fundamentally (Fig 10 illustrates marks that are detected by the optical sensor; the feeding distance to the mark is less than the overall feeding distance of the recording medium).

As per claim 5, Walker et al. teaches a mark recording device (Fig 2.16) that has a feeding amount detecting device (optical sensor Fig 1.21) which detects the feeding amount of the recording medium (paper positioning errors produced by media advance mechanism C5, L45-46) wherein the recording medium feeding device (Fig 1.12) can determine the feeding amount of a recording medium on the basis of the position where the mark detecting device detects a detection signal (underfeed or overfeed of medium is determined by location of calibration marks C6, L60-65), or another case where the feeding amount of the recording medium is determined on the basis of only the detection signal (Fig 6.76) from the feeding amount detecting device (optical sensor Fig 1.21)

As per claim 7, Walker et al. teaches a mark recording device (print head in Fig 2. 16) that records a plurality of marks at a time on the recording medium (5.66 shows a plurality of calibration marks on a recording medium) by ink droplets ejected (ink jet printers, as known to those skilled in the art, eject ink) from a plurality of different nozzles (C3, L4-5), and the mark detecting device detects the marks (C1, L36-38).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Walker et al. as applied to claims 1, 4, 5, and 7 above in view of Gudaitis et al. (US 6,315,382).

Walker et al. teaches an inkjet apparatus with a recording medium feeding device (roller Fig 1.12), however, he does not teach a feeding device that feeds the recording medium at a high speed to a position that is adjacent to a position on which the mark will be detected by the mark detecting device and further feeds the recording medium at a low speed from the position adjacent to the mark.

Gudaitis et al. teaches a recording medium feeding device (C4, L27-30) to feed the recording medium at a high speed (C4, L32) to a position that is adjacent to position on which the mark will be detected by the mark detecting device (target position C4, L28; Figs 5 and 6), and further feeds the recording medium at a low speed from that position (second paper advance is at low speed C5, L26)

It would have been obvious to one having ordinary skill in the art at the time of the invention to combine the recording medium feeding device as taught by Walker et al. with the different speeds of the recording medium feeding device taught by Gudaitis et al. as it would provide higher accuracy in sensing calibration marks.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Walker et al. as applied to claims 1, 4, 5, and 7 above in view of Tayuki et al. (US 6,412,909).

Walker et al. teaches an inkjet recording apparatus (C1, L36) comprising a memory device (Fig 3.42; C3, L2) and a mark detection device (optical sensor Fig 1.21); however, Walker et al. does not teach a memory device to store the feeding amount of the recording medium, wherein if the mark detecting device should fail to detect the mark, the recording medium is fed on the basis of the previous feeding amount stored in the memory device.

Tayuki et al. teaches a memory device that stores control parameters, including the feed distance (C3, L8-10).

It would have been obvious to one having ordinary skill in the art at the time of the invention to combine the recording apparatus with a memory device and mark detection device as taught by Walker et al. with the memory device that stores control parameters of Tayuki et al. because should the detection device fail the printer would still have the capability of feeding the correct amount of recording medium with a memory capability.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Walker et al. as applied to claims 1, 4, 5, and 7 above in view of Bolash et al. (US 6,900,449).

Walker et al. teaches an inkjet recording apparatus (C1, L36) with an optical sensor (Fig 1.21); however, he does not teach a recording medium detecting device that detects whether or not a recording medium exists or a bi-directional position detecting device which performs bi-directional positioning of the recording head in relation to the recording medium.

Bolash et al. teaches a media sensor (Fig 1.16) that detects whether a recording medium exists (C5, L39-40) and a bi-directional positioning of the recording head (C5, L45-45) in relation to the recording medium.

It would have been obvious to one having ordinary skill in the art at the time of the invention to combine the recording apparatus as taught by Walker et al. with a media sensor as taught by Bolash et al. because it is important for the printer to detect whether print media exists.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Walker et al. as applied to claims 1, 4, 5, and 7 above in view of Huston et al. (US 6,386,671).

Walker et al. teaches an inkjet recording apparatus (C1, L36) that prints a mark (calibration mark C1, L48-50); however, he does not teach a mark printed at a point located outside the image printing area.

Huston et al. teaches marking media with an indicia (Fig 11A. 410-414) in such a way that the indicia are located outside the image print area (C9, 54-57 Fig 6.204).

It would have been obvious to one having ordinary skill in the art at the time of the invention to combine the mark made by the recording apparatus as taught by Walker et al. with the indicia located outside of the printing area as taught by Huston et al. because marks located outside the printing media are less intrusive to those viewing the print media; the marks can be read by the printer as it is recording on the print media.

Claims 9 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Walker et al. as applied to claims 1, 4, 5, and 7 above in view of Hanagata et al. (US 4,839,674).

Walker et al. teaches an inkjet recording apparatus (C1, L36) that prints a mark (calibration mark C1, L48-50) perpendicular to the feeding direction of the recording medium (Fig 5.66); however, he does not teach the mark being upstream of the area on which the main scanning of the recording head performs the recording or a mark printed in one scan.

Hanagata et al. teaches a mark that is printed in the recording medium feeding direction (Fig 4.9-12) upstream of the area on which the main scanning of the recording head performs the recording (before image recording C3, L17-19). Hanagata et al. also teaches a mark printed in one scan (C3, L12-17) and is perpendicular (Fig 4.9-12) to the feeding direction of the recording medium

It would have been obvious to one having ordinary skill in the art at the time of the invention to combine the mark taught by Walker et al. with the mark printed upstream of the main scanning area as taught by Hanagata et al. because a mark upstream of the area on which the main scanning of the recording head performs the recording will be less obtrusive and easier to scan when determining a media feed amount and one scan will create a small and unobtrusive mark.

Claims 10, 11, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Walker et al. as applied to claims 1, 4, 5, and 7 above in view of Noyes et al. (US 6,775,022), Fuse (US 5,539,434), and Adkins et al. (US 6,843,547).

Walker et al. teaches an inkjet recording apparatus (C1, L36) with a recording head (Fig 2.16) with a plurality of nozzles (Fig 2.32); however, he does not teach a recording head composed of a plurality of heads, and among those heads, the head which has the nozzle for printing the mark on the recording medium by ejecting ink droplets, is shifted for one nozzle interval from the other heads, in the recording medium feeding direction. Walker et al. also teaches a mark recording device that allows the mark printing nozzle to eject ink for a distance necessary for printing the mark (when printing, recording device allows proper in ejection in order for ink to reach paper C2, L66+)

Noyes et al. teaches multiple print heads (Fig 5.37a-b; C10, L56-57) with nozzles for printing (Fig 7.61-62; C14, L14-21) by ejecting ink droplets.

Fuse teaches a head shifted one nozzle interval from the other heads in the paper feed direction (in Fig 4, B-head is shifted one nozzle in the paper feed direction from C-head).

Adkins et al. teaches an apparatus wherein a mark recording device prevents nozzles adjacent to the mark printing nozzles from ejecting ink (each nozzle ejects ink separately C10, L42-45).

It would have been obvious to one having ordinary skill in the art at the time of the invention to combine the inkjet recording apparatus with recording head and nozzles as taught by Walker et al. with multiple print heads as taught by Noyes et al. because multiple print heads allow for the printer to maintain separate print heads for color and black ink.

It would have been obvious to one having ordinary skill in the art at the time of the invention to combine the inkjet recording apparatus with recording head and nozzles as taught by Walker et al. with the shifted nozzles taught by Fuse because a shifted print head will allow for more coverage in areas on the print media.

It would have been obvious to one having ordinary skill in the art at the time of the invention to combine the inkjet recording apparatus with recording head and nozzles as taught by Walker et al. with the mark recording device preventing nozzles adjacent to the mark recording nozzle from recording as taught by Adkins et al. because a single nozzle will create a thin test mark that is less obtrusive to those viewing the media on which the test mark will be recorded.

Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Walker et al. as applied to claims 1, 4, 5, and 7 above in view of Walker et al. (US 6,425,650).

Walker et al, in US 6,158,344, teaches an inkjet recording apparatus (C1, L36) with a mark detecting device (optical sensor Fig 1.21); however, he does not teach a light reflection type sensor with a light emitting element; a condenser lens or a light receiving sensor

Walker et al, in US 6,425,650, teaches a reflection type sensor (C9 L35; Fig 2.116) having a light emitting element (LED, C9, L23-24; Fig 2.105) which emits a detecting light beam (output spectrum, C9, L24) onto the recording medium (C10, L48; Fig 2.150); a condenser lens (Fig 2.110) which condenses the detecting light beam emitted from the light emitting element (Fig 2.105); and a light receiving sensor (Fig 2.165'; C10, L59-60) that detects the light beam reflected (C10, L2-6; Fig 2.136-138) from the surface of the recording medium (Fig 2.150) on which the detecting light beam is focused by the condenser lens, wherein the light emitting element (Fig 2.115) and the optical axis (Fig 2.110) of the condenser lens are angled to the surface of the recording medium in the direction perpendicular (Fig 2.116, 135, 135') to the feeding direction of the recording medium. Walker et al. also teaches a light receiving sensor (Fig 2.165') which detects light reflected (Fig 2.155') from the surface of the recording medium (Fig 2.150) on which the detecting light is focused by the condenser lens (Fig 2.110), wherein the light emitting element (Fig 2.115) and the optical axis (Fig 2.110) of the condenser lens are approximately perpendicular to the surface of the recording medium.

It would have been obvious to one having ordinary skill in the art at the time of the invention to combine the inkjet recording apparatus from Walker et al. ('344) with the sensor from Walker et al. ('650) because an optical sensor with light reflecting elements will help detect the reference mark.

Claims 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Walker et al. as applied to claims 1, 4, 5, and 7 above in view of Armijo et al. (US 6,352,331).

Walker et al. teaches an inkjet recording apparatus (C1, L36) that records a mark (C1, L48-50); however, Walker et al. does not teach a mark that is yellow or a blue LED and a light detecting element that is sensitive to blue.

Armijo et al. teaches a yellow marking on a test pattern (C4, L57; Fig 11), a blue LED (C4, L32), and a light detecting element that is sensitive to blue (C4, L57-58).

It would have been obvious to one having ordinary skill in the art at the time of the invention to combine the inkjet recording apparatus from Walker et al. with the mark and LED from Armijo et al. because yellow is a light color that is unobtrusive on the print media and a blue LED will best sense a yellow element.

Applicant cannot rely upon the foreign priority papers to overcome this rejection because a translation of said papers has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15.

Allowable Subject Matter

Claim 15 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: Prior art does not disclose or suggest a light emitting element, condenser lens, and recording medium arranged to satisfy the inequality k x b < a x m.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Laura E. Martin whose telephone number is (571) 272-2160. The examiner can normally be reached on Monday - Friday, 7:00 - 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David M. Gray can be reached on (571) 272-2119. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Laura E. Martin

David Gray
Primary Examiner